



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,376	01/15/2004	Stephen Clark Purcell	022193-060710US	6693
20350	7590	11/15/2004	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			SONG, JASMINE	
			ART UNIT	PAPER NUMBER
			2188	

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,376

Applicant(s)

PURCELL ET AL.

Examiner

Jasmine Song

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/15/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. Claims 1-19 are presented for examination.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Priority

3. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

Drawings

4. The drawings filed on 08/08/2001 have been approved by the Examiner.

Oath/Declaration

5. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Novak et al., U.S. Patent 6,295,586 B1.

Regarding claim 1, Novak teaches that an apparatus comprising:

a queue (one of the AQ 340, PQ 350 and RWQ 360 as shown in the Fig.2) storing a plurality of memory transactions (col.9, lines 3) to be sent over a memory bus (Fig.1 or Fig.2, element 100) to a memory having a plurality of memory banks(Fig.1, element 70, col.6, lines 32-34), each memory transaction addressed to one of the memory banks (col.6, lines 53-56 and lines 63-64 and col.7, lines 9-11 and lines 46-53), the memory bus incapable of transmitting the plurality of memory transactions simultaneously (col.7, lines 44-47 and col.9, lines 5-8); and

an arbiter (Fig.2, element 370) configured to identify a plurality of bank readiness signals, each bank readiness signal indicating the readiness of one of the memory banks to accept a memory transaction (col.11, lines 14-17), and
select one of the memory transactions for transmission over the memory bus based on the bank readiness signals (col.11, lines 17-22).

Regarding claim 2, Novak teaches that further comprising:

a memory controller (Fig.1, element 200, col.5, lines 23-30) configured to send the selected memory transaction (the selected operation with highest priority) over the memory bus (Fig.1 or Fig.2, element 100).

Regarding claim 3, Novak teaches that further comprising:

a queue controller (Fig.2, element 365) configured to associate with each of the memory transactions a different priority in a set of priorities (col.9, lines 11-19); and
wherein

the arbiter (Fig.2, element 370) is further configured to select the one of the memory transactions when the bank readiness signal indicates that the memory bank to which the one of the memory transactions is destined is ready to accept a memory transaction and the priority associated with the one of the memory transactions is greater than a priority associated with any of the other memory transactions (col.11, lines 12-22).

Regarding claim 4, Novak teaches that wherein:

each priority represents an age of a memory transaction is taught as each entries in the operation queue has a priority and strictly adhering to timing dependency (col.9, lines 5-19).

Regarding claim 5, Novak teaches that wherein:

the arbiter (Fig.2, element 370) is further configured to generate the bank readiness signals is taught as the requester send to the arbiter will assert the bank readiness signals (col.11, lines 14-16).

Regarding claim 6, Novak teaches that wherein:

the arbiter is further configured to send a memory transaction to a memory bank, clear the bank readiness signal for the memory bank at approximately the time of sending the memory transaction to the memory bank, and set the bank readiness signal for the memory bank a predetermined period of time after sending the memory transaction to the memory bank (col.9, lines 22-26 and col.11, lines 12-22).

Regarding claims 7, 13 and 19, Novak teaches that a method comprising:

identifying a plurality of memory transactions (col.9, lines 3, the queued operations within three queue as shown in the Fig.2) to be sent over a memory bus (Fig.1 or Fig.2, element 100) to a memory having a plurality of memory bank (Fig.1, element 70, col.6, lines 32-34), each memory transaction addressed to one of the

Art Unit: 2188

memory banks (col.6, lines 53-56 and lines 63-64 and col.7, lines 9-11 and lines 46-53), the memory bus incapable of transmitting the plurality of memory transactions simultaneously (col.7, lines 44-46 and col.9, lines 5-8);

identifying a plurality of bank readiness signals, each bank readiness signal indicating the readiness of one of the memory banks to accept a memory transaction (col.11, lines 14-17); and

selecting one of the memory transactions for transmission over the memory bus based on the bank readiness signals (col.11, lines 17-22).

Regarding claims 8 and 14, Novak teaches that further comprising:

sending the selected memory transaction (the selected operation with highest priority) over the memory bus (Fig.1 or Fig.2, element 100).

Regarding claims 9 and 15, Novak teaches that wherein each of the memory transactions is associated with a different priority in a set of priorities (col.9, lines 11-19), and wherein selecting further comprises:

selecting the one of the memory transactions when the bank readiness signal indicates that the memory bank to which the one of the memory transactions is destined is ready to accept a memory transaction and the priority associated with the one of the memory transactions is greater than a priority associated with any of the other memory transactions (col.11, lines 12-22).

Art Unit: 2188

Regarding claims 10 and 16, Novak teaches that further comprising:

associating the priorities with the memory transactions based on an age of the memory transactions is taught as each entries in the operation queue has a priority and strictly adhering to timing dependency (col.9, lines 5-19).

Regarding claims 11 and 17, Novak teaches that further comprising:

generating the bank readiness signals is taught as the requester send to the arbiter will assert the bank readiness signals (col.11, lines 14-16).

Regarding claims 12 and 18, Novak teaches that wherein generating comprises:

sending a memory transaction to a memory bank; clearing the bank readiness signal for the memory bank at approximately the time of sending the memory transaction to the memory bank; and setting the bank readiness signal for the memory bank a predetermined period of time after sending the memory transaction to the memory bank (col.9, lines 22-26 and col.11, lines 12-22).

8. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111 (c).

Art Unit: 2188

9. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasmine Song whose telephone number is 571-272-4213. The examiner can normally be reached on 8:00-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7238 for regular communications and 703-746-7239 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Jasmine Song

Patent Examiner

November 10, 2004


11/10/04

Mano Padmanabhan

Supervisory Patent Examiner

Technology Center 2100

**MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER**